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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,063	02/19/2002	Hubbert Smith	42P13499	8561

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EXAMINER

PORTKA, GARY J

ART UNIT	PAPER NUMBER
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2188

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/080,063

Applicant(s)

SMITH, HUBBERT

Examiner

Gary J. Portka

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on response submitted March 24, 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/28/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. Claims 1-43 are pending. A new examiner was assigned to this application because the previous examiner is no longer available.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Ofek, US 5,901,327.
4. As to claims 1, 5, 16, 20, 33, and 37, Ofek discloses a *first adapter (and method, and instructions for) used in a first server (SITE A) comprising HBA (16) including circuitry to cause in response to a first request execution of a first storage operation to mass storage (20), and to issue also in response to the first request a second request from the HBA to a second adapter (44) in a second server (SITE B) to cause a second storage operation with second mass storage (48)*. See Abstract, Fig. 1, col. 2 lines 37-53, col. 7 lines 22-35, col. 8 lines 39-50, and col. 16 lines 22-37. The SITES A and B each may be considered a server since they control access to the storage resource to be used (see col. 6 lines 24-29 where it is described that a host 12 or 52 is required to access the data storage systems 14 or 46, which therefore are not standalone devices but rather peripherals of the hosts 12 and 52 respectively). The controller 16 may be

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considered a host bus adapter since it is an I/O adapter that connects a host I/O bus (depicted at signal path 18) to the host's memory system (data storage 20).

5. As to claims 2, 6, 17, 21, and 32, Ofek discloses *the adapter further comprising additional circuitry to issue in response to a first message from the second adapter (44) a second message to a process in the first server (SITE A), the first message indicating the second storage operation has completed, the second message indicating the storage operation by the first request has been completed* (see col. 13 lines 1-21).

6. As to claims 3, 7, 18, and 22, Ofek discloses *the second request and the first message each comprise respective target node address field, initiating node address field, command field, and message identification field, and respective message identification fields in the second request and the first message contain identical respective values* (see col. 44 lines 21-35).

7. As to claims 4, 10, 14, 19, 25, 29, 31, and 39-42, Ofek discloses the invention substantially as described hereinabove regarding claim 1. The additional limitation that *the adapters include I/O processors* is also disclosed (i.e., 32, see col. 5 lines 12-16).

8. As to claims 8, 9, 11, 15, 23, 24, 26, 30, 34, 38, and 43, Ofek discloses *the first adapter is coupled to the first set of mass storage devices, the second adapter comprises a second HBA (44) coupled to the second set of mass storage devices, and the first and second adapters are coupled via a network communication link (40)*.

9. As to claims 12, 27, and 35, Ofek discloses the second storage operation comprises one or more of: designation of first data volume in a second server (SITE B)

in which data stored in a second volume in the first server (SITE A) is to be replicated; and replication in the first data volume of the data (see col. 12 lines 6-40).

10. As to claims 13, 28, and 36, Ofek discloses the second storage operation comprises one or more of: termination of previously established association between first data volume in the second network node and a second volume in the first network node, the association designating the data stored in the second volume is to be replicated in the first volume; and re-establishment of the previous established association after the previously established association has been terminated (see col. 13 lines 15-21).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art, in view of Tabuchi et al., EP 1 150 210 A2.

13. As to claims 1, 5, 16, 20, 33, and 37, the admitted prior art at pages 1-3 discloses *a first adapter (and method, and instructions for) used in a first server comprising HBA including circuitry to cause in response to a first request execution of a first storage operation to mass storage, and issuing also in response to the first request a second request to a second adapter in a second server to cause a second storage operation with second mass storage.* The admitted prior art does not disclose that the issuing of a

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second request to the second adapter is done by the HBA; rather, it states that this is done by a NIC. This is the same as combining these recited functions of the NIC and the HBA into a single unit. Tabuchi discloses an analogous redundant storage system (see Abstract and Fig. 1) where the functions of processing a local storage operation and the issuing of a request to a remote system for a second storage operation, are performed by the same unit. See Fig. 2 (elements 11, 12, 14, 15, 16, 17, and 18), and paras. 0022, 0028, and 0032 to 0035. This system is equivalent, and thus entirely analogous to, the redundant server system described by the admitted prior art (see paras. 0002 and 0008; Tabuchi describes a redundant storage center to be used by multiple users for database access, and thus describes servers). The combining of the functions of performing local and redundant remote storage operations by the same unit, in response to a requested storage operation, would have been desirable due to the clear reduction in the number and/or amount of circuits needed, which likely would reduce cost and improve performance without burdening the host processor. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the functions of performing local storage operation with issuance of remote redundant storage operation from the same unit (which by definition would still be called a host bus adapter) because as taught by Tabuchi it was known to be beneficial to combine these functions in a single unit in a redundant storage server system.

14. As to claims 2-4, 6-15, 17-19, 21-32, 34-36, and 38-43, the recited limitations appear to be either explicitly described in the admitted prior art, or inherent features

thereof, and thus are disclosed in the prior art combination described above with regard to claim 1.

Response to Arguments

15. Applicant's arguments filed in the Appeal Brief of September 23, 2004, and in the paper filed March 24, 2005 have been fully considered but they are not persuasive.

16. Applicants argued that Ofek does not use a host bus adapter, that connects a host I/O bus to the host memory system. As explained hereinabove, Examiner interprets the recited server as SITE A, which includes the reference host 12 and data storage system 14, along with adapter 16 (since storage system 14 is a peripheral storage of the reference host 12). Adapter 16 certainly connects to a host I/O bus 18 (argued by Applicant as "any path used for the transfer of data and control information between" a host and another device), and thus connects host memory to a host I/O bus as argued.

17. Notwithstanding the above, the argument that a computer dictionary is not in the field of the invention, which is data storage, is untenable. First, the present invention as depicted in Fig. 1 is clearly not solely directed to data storage per se, since processors, interfaces, and networks all come into play to implement the system and method, and thus the present invention includes many elements of computer technology in general. Second, the computer dictionary includes many definitions of storage devices, and thus is also related to storage. Third, Applicant wishes to use a definition from a RAID book, which does not pertain to data storage in general but to specific disk array configurations. The present invention is not directed specifically to RAID. The claims

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do not recite any limitation with regard to the disk arrays, and the host bus adapter, not the arrays of Fig. 1, are at the core of the invention (the invention does not depend upon what is used for the disk arrays of Fig. 1 as claimed). Examiner therefore concludes that one of ordinary skill in the art would have considered the computer dictionary definition of "host bus adapter" as the broadest reasonable interpretation (i.e., "a device for connecting a peripheral to the main computer"), and notes that if Applicant wishes the term to have a more narrow meaning the difference should be recited in the claims.

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). It is noted that Applicant amended in response to the original first action 102 rejection over Ofek, and afterwards appealed the final rejection with regard thereto, and further that new art was submitted in an IDS after final. Therefore with the present 103 rejection over the new art, and the 102 rejection over Ofek, it is justified to make the action final.

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary J. Portka whose telephone number is (571) 272-4211. The examiner can normally be reached on M-F 9:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (571) 272-4210. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Gary J Portka
Primary Examiner
Art Unit 2188

June 3, 2005